The Report Committee for Kate Elizabeth Harris
Certifies that this is the approved version of the following report:

Depression in Children and Adolescents with Asperger's Syndrome: The Role of Peer Victimization and Self-Perceived Social Competence

APPROVED BY
SUPERVISING COMMITTEE:

Supervisor:

Timothy Keith

Greg Allen

Depression in Children and Adolescents with Asperger's Syndrome: The Role of Peer Victimization and Self-Perceived Social Competence

by

Kate Elizabeth Harris, B.S.

Report

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Arts

The University of Texas at Austin

December, 2010

Abstract

Depression in Children and Adolescents with Asperger's Syndrome:

The Role of Peer Victimization and Self-Perceived Social Competence

Kate Elizabeth Harris, M.A.

The University of Texas at Austin, 2010

Supervisor: Timothy Z. Keith

Depression is among the most prevalent comorbid conditions in children with Asperger's Syndrome. Little research has examined the variables that may contribute to depression among such children. Children with Asperger's show social skill deficits and are often subjected to peer victimization, including isolation and teasing by their peers. It is hypothesized that peer victimization experienced by children with Asperger's will, in part, explain their self-perceived social competence. It is also hypothesized that self-perceived social competence and peer victimization will help explain depression among such children. Multiple regression will be used to examine these presumed effects.

Table of Contents

Introduction

Asperger's Syndrome (AS) was first described by Hans Asperger in 1944, and was later described by Wing (1981) and Gillberg (1991) as a disorder on the autism spectrum. AS is a developmental disorder that is characterized by impairments in social interaction, social or emotional reciprocity, social imagination, flexible thinking, and imaginative play (Myles et al., 2007). The DSM-IV criteria also include restricted and stereotyped interests, and no significant delays in cognitive or language development (American Psychiatric Association, 2000). There is no known cause for AS, but similar to other autism spectrum disorders (ASD), there are various theories that involve heredity and environmental triggers (Folstein, Rowen-Sheidley, 2001; Libbey, Sweeten, McMahon, Fujinami, 2005). Asperger's is estimated to be more prevalent in males than in females at ratios as high as 10:1 (Gillberg, 1989). The estimates of the prevalence of Asperger's in the United States vary, with ranges from 0.3 to 6.7 per 1,000 (Bertrand, Boyle, Yeargin-Allsopp, Decoufle, Mars, & Bove, 2001).

One of the most defining and salient characteristics of AS is difficulty with social skills (Rogers, 2000; Wing, 1981). Difficulties with social skills can result in many negative experiences throughout the course of a child's life. Research has shown that social skill deficits can affect academic achievement, peer relationships, mental well-being, job attainment, independence, and quality of life (Hendricsson & Rydell, 2006; Portway & Johnson, 2005). Since social skill deficits can contribute to depression, and social skills are significantly impaired in those with AS, it is not surprising that

depression is one of the most prevalent comorbid psychiatric conditions in this population (Ghaziuddin et al. 2002; Howlin, 2005; Leyfer, 2006). Rates of depression in individuals with autism spectrum disorders range from 5 to 82 percent (Barnhill, 2001).

Depression can lead to many negative outcomes and poor quality of life. Some examples of such outcomes include emotional distress, losses of productivity, absenteeism from work, and premature death (Hirschfeld et al., 1997). There is also evidence of economic drain on individuals, families, and society; risk of suicide (Cicchetti & Toth, 1998); and impaired marital, interpersonal, and occupational relationships (Hammen, 1991). Furthermore, experiencing depression in childhood results in a high chance of developing depression as an adult (Harrington, Fudge, Rutter, Pickels, & Hill, 1990).

The development of depression in individuals with AS may be influenced by an increasing awareness, with age, of their deficits in the ability to interact with and relate to others (Klin et al., 2000). Children who were older and had higher IQs perceived more difficulties with their social abilities, which predicted higher levels of depression (Capps, Sigman, & Yirmiya, 1995; Vickerstaff, 2006; Williamson, Crig, & Slinger, 2008). A study conducted by the National Autistic Society of Great Britain found that only 12% of individuals with AS were employed and that social difficulties at work were the leading cause of job failure (Bernard, Harvey, Potter, & Prior, 2001). Because of the relatively recent public awareness of Asperger's, it is not uncommon that adults with AS have never been officially diagnosed (Portway & Johnson 2005; Tantam, 1991). Indeed, some adults are not diagnosed until a major event, such as a suicide attempt or an altercation

with the law, which results in a psychiatric review of the person's developmental history (Tatam, 1991). This finding suggests that these adults may be experiencing depression that could lead to suicide attempts and provides evidence for the importance of early diagnosis and intervention.

Early clinical reports suggested that children with autism have a desire for aloneness (Kanner, 1943). This notion has changed as it has been found that children with AS have a desire to develop relationships, but do not know how to do so (Bauminger, Shulman, & Agam, 2003). Children with AS report less satisfaction with their existing friendships and experience loneliness more frequently and severely than typically developing children (Bauminger & Kasari, 2000). This desire to be accepted by others, in combination with low perceptions of their social skill abilities and frequent rejection from peers may, in part, help to explain depressive symptoms.

Children with AS can have difficulties with many aspects of social interaction. Although the degree of severity of social impairment and areas of weakness will vary among individuals, children with AS may display challenges in social interaction that hinder their ability to develop and maintain relationships. Such challenges include difficulties in nonverbal behaviors such as eye contact, reading and displaying appropriate facial expressions, and body language (Katsyri, Saalasti, Tiippana, von Wendt, Sams; 2008). Such children also often have difficulties in conversational skills, which include initiating and sustaining a conversation, using appropriate turn-taking, changing topics appropriately, and having trouble understanding or using non-verbal social cues (Myles et al., 2007). Children with AS often interpret language literally and

consequently have difficulty understanding non-literal language such as sarcasm, metaphors, figures of speech, and irony (Buettel, 2003). People with AS also lack the ability to notice and repair misunderstandings or deviations from a conversation. More specifically, they do not attempt to clarify communication in order to ensure understanding when miscommunications arise, or adjust their topic to fit the interests of their social partner. This difficulty in recognizing when and how to use these skills may be related to their difficulty in theory of mind, which involves being able to take the perspective of another person (Gutstein & Whitney, 2002).

Feelings of social inadequacy and knowledge of social-competence are not instinctive or automatic. The child's negative interactions or exclusion from peers may be an important factor in the development of feelings of inadequacy in those with AS. Research shows high rates of peer victimization and exclusion of children with AS, as reported by their mothers (Little, 2002). One study showed an increase in peer victimization as children with AS get older, which, in combination with comorbid conditions of anxiety and depression, placed these children at risk for suicidal ideation (Shtayermman, 2007). Similarly, repeated peer rejection and victimization in neurotypical children was found to be predictive of internalizing disorders, such as depression and anxiety (Reijntjes, 2006).

The potential negative outcomes and experiences mentioned above are significant reasons to determine what contributes to the development of depression in children with AS. Although there is research on the effects of peer victimization in neurotypical children and adolescents, research is lacking on the effects of peer victimization in

children with AS. Also, while there is extensive research on difficulties in social skills in children with AS, there is little research on their perception of their social abilities, and subsequently how this self-perception may affect levels of depression. Gaining a greater understanding of variables that contribute to depression symptomotology may have important implications for prevention and treatment of depression in children with AS.

The specific goal of this study will be to examine how depressive symptoms in children with AS varies depending on levels of perceived social competence and levels of experienced peer victimization. Specifically, this study will examine whether self-perceived social competence mediates the presumed effect of peer victimization on depression.

Integrative Analysis

The aim of the following integrative analysis is to explore a possible connection between peer victimization and self-perceived social competence as possible influences on depression in children and adolescents with Asperger's Syndrome. First, a brief history of AS is described, followed by the symptomatology of AS, current theories of the etiology of AS, and theories explaining the increase in the prevalence of AS and other autism spectrum disorders (ASD). Next, theories of depression in children and adolescents are discussed, followed by a description and analysis of research on depression in children and adolescents with AS. Finally, social competence and peer victimization research is discussed, with a focus on how these variables might contribute to depression in children and adolescents with AS.

Asperger's Syndrome

History of AS

Asperger's Syndrome is a subtype of autism spectrum disorders, which are a group of developmental disorders characterized by impairments in social interaction, communication, and repetitive or stereotypic behavior (Newschaffer, et al., 2007). A summary of the early descriptions of autism was presented by Lyons and Fitzgerald (2007). The term 'autistic' was first used by Bleuler, a Swiss psychiatrist, who used the label to describe schizophrenic characteristics in individuals. In 1943, two authors described autistic psychopathology; Leo Kanner in Baltimore, USA, and Hans Asperger, in Vienna, Austria. Asperger's writings were known within the German speaking community, but became well known when his work was described by Lorna Wing in

1981, and when his writings were translated by Frith in 1991. Wing suggested that AS was a type of autism spectrum disorder. There is a debate regarding whether Kanner or Asperger was the first to describe these individuals, as their papers were written in the same year. However, in 1938, Asperger gave a lecture in the Vienna Hospital describing his case studies of 'autistic psychopaths'. The lecture was printed that year in the Viennese Weekly Clinical Magazine. It is possible that Kanner saw this lecture article as his birthplace was Vienna and he was a native German speaker (Lyons & Fitzgerald, 2007).

Diagnostic Criteria for AS

In 1994, the American Psychiatric Association recognized AS as a subtype of pervasive developmental disorder with distinct criteria from autism. One of the most significant differences between AS and other autism spectrum disorders is a lack of cognitive impairment in AS (American Psychiatric Association, 2000). Researchers and practitioners have had difficulties distinguishing between AS and high-functioning autism (HFA) (Freeman, Cronin, & Candela, 2002; Sciutto & Cantwell, 2005; Tryon, Mayes, Rhodes, &Robert, 2006). The current distinguishing criteria between AS and HFA as put forth by the 4th edition, text revision of the Diagnostic and Statistical Manual of Mental Disorders [DSM-IV-TR] is that individuals with Asperger's do not have significant language delays (American Psychiatric Association, 2000). There are also debates on whether Asperger's belongs on the autism spectrum or if it is a separate and distinct condition (Klin, Volkmar, & Sparrow 2000; Lord & Corsello, 2005).

Wing's descriptions of individuals with AS included the following behaviors: "lack of empathy, inappropriate, one-sided interactions, little or no ability to form friendships, pedantic, repetitive speech, poor nonverbal communication, intense absorption in certain obscure subjects, and clumsy, stereotyped motor movements" (Wing, 1981). The DSM-IV criteria include impaired reciprocal interaction; restricted, repetitive, and stereotyped patterns of behavior, interests, and activities; and an absence of any clinically significant delay in language or cognitive development (American Psychiatric Association, 2000). The two measures most commonly used to diagnose AS are the ICD-10 (World Health Organization, 1992) and the DSM-IV, which include similar criteria. Other symptoms of AS that are not included in the DSM-IV or ICD-10 that are under further investigation by researchers include adaptive behavior, motor difficulties, emotional vulnerabilities, sensory sensitivity, and academic difficulties (Lee, H.J. & Park, R.H., 2007; Myles et. al, 2007; Rinehart, 2006).

Prevalence and Etiology

The prevalence rates of autism have increased since initial prevalence surveys in the 1960s (Newschaffer, et. al, 2007). The Medical Research Council in the UK argued that the drastic increase in the prevalence of autism is likely from changes in diagnostic practice, public and professional knowledge and awareness, and methodological differences between studies (MRC, 2001). The increase may also be due to changes in the definitions of the disorders over the years and better assessment tools (Fombonne, 2005). Recent prevalence reviews in the US indicate estimates of 60 per 10,000 (Bertrand

et al., 2001) for ASD and estimates of the prevalence of Asperger's with ranges from 0.3 to 6.7 per 1,000 (Bertrand et al, 2001).

Although there is no conclusive evidence regarding the etiology of Autism Spectrum Disorders, it is thought that there is a complex interaction of genetics and environment (Moy & Nadler, 2008). Research has found evidence of possible brain differences in people with autism, (Acosta & Pearl, 2004), which may play a role in the symptomotology exhibited by these individuals. When examining brain regions that may have a contributing effect, the cerebellum is thought to be an important area of involvement due to many findings of abnormalities in this region among people with autism (Allen, 2005). Furthermore, both animal and human research that has examined lesions and tumors in the cerebellum show evidence of behavioral and cognitive impairments similar to those displayed by people with autism (Berntson & Schumacher, 1980; Bobee, Mariette, Tremblay-Leveau, & Caston, 2000; Eluvathingal et. al, 2006; Weber, Egelhoff, McKellop, & Franz, 2000).

Evidence for a genetic contribution to autism is demonstrated by twin studies that yield high concordance rates of 70-80% between monozygotic twins (Folstein, Rowen-Sheidley, 2001). Research has demonstrated higher rates of concordance for autism in monozygotic twins as compared to dizygotic twins (Bailey et. al, 1995; Ritvo, Freeman, Mason-Brothers, Mo, Ritvo, 1985), providing further evidence for a genetic component for autism.

Environmental risk factors are also hypothesized to contribute to Autism, but findings are inconclusive (Miller & Reynolds, 2009). Early developmental risk factors,

such as prenatal exposure to viruses (Libbey, Sweeten, McMahon, Fujinami, 2005) and early childhood exposure to antibiotics and vaccinations (Fallon, 2005; Kawashima et al., 2000) have been hypothesized to contribute to the risk for the development of autism, but convincing evidence for these hypotheses is lacking.

It is likely that the risk factors that contribute to autism are complex and multifaceted, perhaps involving an interaction between both environmental exposures and genetic predispositions. Even with the little evidence that is available, there still lies the obstacle of distinguishing the differential risk factors that lead to the unique characteristics of the subtypes of Autism.

Depression in Children and Adolescents

The development of depression in children and adolescents is thought to have many possible causes that include affective, environmental, biological, and cognitive influences. The interaction of such influences, rather than a single influence, is likely to result in a greater predisposition and vulnerability to the development of depression. Many theories have a main focus on affective, environmental, biological, or cognitive influences, while some theories have a more integrated approach to discussing the interplay of potential contributing factors. The diagnostic criteria for depression and current prevailing theories and models of depression will be described.

The DSM-IV-TR (American Psychiatric Association, 2000) provides diagnostic criteria for depression in children under three categories in the mood disorders section: Major Depressive Disorder (MDD), Dysthymic Disorder (DD), and Depressive Disorder Not Otherwise Specified (DDNOS). The criteria for childhood depression are quite

similar to the adult depression criteria. Major Depressive Disorder criteria include the following: a depressed mood or loss of interest in pleasurable activities for at least two weeks and at least four additional symptoms that include changes in weight, appetite, sleep, and activity level. Also included in the criteria are feelings of worthlessness or guilt, suicidal ideation, and problems concentrating. A unique characteristic of depression in children is that they may show signs of irritability rather than sadness, as seen in adults. Dysthymic Disorder criteria include a depressed or irritable mood that persists over a period of one year and two of the previously mentioned symptoms. Depressive Disorder Not Otherwise Specified is diagnosed when the symptoms do not qualify for diagnoses of MDD or DD (American Psychiatric Association, 2000).

Developmentally, research suggests that the prevalence of depressive symptoms increases significantly in early to middle adolescence for both boys and girls. Adolescent girls tend to have significantly higher rates of depressive symptoms (Nolen-Hoeksema, Girgus, & Seligman, 1994; Hankin et al., 1998).

Many theories suggest that cognition plays a role in the development of depression. Cognitive vulnerability-stress models suggest that people with a negative cognitive style may have a higher predisposition towards developing depression when they are faced with negative events. Three extensively researched cognitive vulnerability-stress models include Beck's cognitive theory of depression, Abramson's hopelessness theory, and Nolen-Hoeksema's ruminative response styles theory. While the theories focus on different aspects of cognition, they all share the perspective that when people with certain cognitive styles encounter stress, depression can result.

Beck (1964) proposed a cognitive theory of depression that suggested that depressed individuals have distorted and negative cognitions about the self, world, and future. These negative thoughts are thought to be a result of early experiences that contribute to a person's negative schemas. These negative schemas may predispose the person to focusing on negative aspects of encountered events. In other words, when confronted with an ambiguous event, the child with a negative self-schema may interpret the event based on their negative self-perceptions.

Another cognitive model of depression is Abramson's et al. (1989) hopelessness theory of depression, which suggests that the individual who makes negative assumptions about the causality, self, and consequences in response to stressful or negative life events will have a higher propensity to developing depression. Specifically, a child may make attributions to the causes of negative events, including global, stable, and internal causes, which predisposes him to developing depression (Abramson, Metalsky, & Alloy, 1989).

Lastly, Nolen-Hoeksema's (1991) theory is another cognitive based theory that focuses on rumination style in relation to developing vulnerability to depression. The theory suggests that individuals who continually think about their symptoms of depression and negative events are susceptible to depression by increasing a negative mood and reducing functional behaviors, such as problem solving or other positive behaviors.

Other cognitive theories focus on more pervasive cognitions, rather than cognitions combined with negative life events. For example, research has also proposed that negative beliefs about self-worth in domains such as interpersonal, academic, and

body image, especially at the time of puberty, may predict depression (Hyde, Mezulis, & Abramson, 2008).

Genetics and biological predispositions may put an individual at risk for developing depression, especially with an interaction of environmental and cognitive triggers. Twin studies show that the concordance of depression in monozygotic twins is greater than dizygotic twins (McGuffin & Katz, 1989; Sullivan, Neale, and Kendler, 2000). Specific genes such as the serotonin transporter (5-HT) gene, have been associated with depression, and selective serotonin reuptake inhibitor antidepressants have been shown to be effective in treating depression (Tamminga et al, 2002). The puberty process has also been suggested as a contributing factor to depression because of hormonal and developmental changes that are combined with children's perceptions of body ideals (Hyde, Mezulis, & Abramson, 2008).

A child's environment may also contribute to the development of depression. Research has shown that initial episodes of depression are likely to be triggered by negative life events, especially in adolescence (Monroe & Harkness, 2005; Grant, Compas, Thorn, McMahon, & Gipson, 2003). Family relationships also likely affect depression levels in children. For example, family conflict and parental depression have been shown to be associated with depression in children (Davies & Windle, 1997). Although parental depression may be an environmental stressor for the child, it may also be a hereditary influence. Stark, Rouse and Livingston. (1991) hypothesized that children's family relationships and early learning experiences contribute to their core schemata of developing negative thoughts about the self, the world, and the future.

Specifically, negative interactions with parents, receiving messages of rejection, and overly punitive discipline contribute to the child's feelings of low self-worth and subsequently affect future interactions with others that serve to maintain their schema (Stark et al., 1991).

As suggested previously, social competence and self-perceptions of social competence may also play a role in the development of depression in children. A study that examined perceived social competence and depression in young adults indicated that higher depressive symptoms were associated with a greater negative discrepancy between self and peer ratings of social competence (when the person viewed themselves more negatively than did their peers). Conversely, lower depressive symptoms were found when the subject overestimated his or her social competence relative to peer ratings, resulting in a positive discrepancy (Whitton, Larson, & Hauser, 2008). Another important finding was that peers rated the young adults who had higher depressive symptoms as less socially competent. One possible reason for such a correlation is that poor social skills may cause a cycle of isolation and depression, as suggested by Coyne (1976). That is, children who are viewed as less socially competent may have reduced or negative interactions with their peers, which subsequently fuels their depressive symptoms and makes them even less likely to be accepted by their peers. Therefore, children with poor social skills are likely to receive little social reinforcement from others, which may contribute to depression (Lewinsohn, Mischel, Chaplin, & Barton, 1980). Joiner (2000) also described how social skill deficits can bring about depressive symptoms, which can result in a cycle of depression and stagnation of social skill development.

When discussing the possible causes of depression, it is important to note the concepts of equifinality and multifinality. Equifinality refers to the concept that different routes may lead to equal outcomes in different individuals, while multifinality refers to the concept that similar paths can lead to different outcomes in different individuals (Hinshaw, 2008). These constructs are important to keep in mind when studying psychopathology because it is important to maintain the notion that every individual is different and has different experiences, and development of depression is not necessarily imminent if a child has certain characteristics and experiences.

Depression in Children and Adolescents with Asperger's

Although the influences involved in the high prevalence of depression in AS are not fully understood, findings do suggest that poor social skills and low perceptions of these skills may contribute to the development of depression in this population (Capps, Sigman, & Yirmiya, 1995; Vickerstaff, 2006; Williamson, Crig, & Slinger, 2008). Since a defining impairment of AS concerns social skills, their perceptions may not be distorted, as some theories of cognitive models of depression suggest (Beck, 1967). Their perceptions may be realistic, and their social inadequacies may be perceived by others and subsequently result in few positive interactions (Lewinsohn et al., 1980). The risk for developing major depression throughout the lifetime in autism spectrum disorders is higher than the normal population (Leyfer et al., 2006).

Cognitive factors may also play a role in the development and maintenance of depression in children with AS. For example, there is evidence that attributional styles predict level of depression in adolescents with AS. Adding evidence to Abramson's

(1989) previously mentioned theory, adolescents with AS who attributed social failure and negative life events to more internal, stable, and global causes had higher rates of depression than their counterparts that made external attributions (Barnhill, 2001; Barnhill & Myles, 2001). Intelligence might play a role in the severity of depressive symptoms in children and adolescents with AS. Findings have indicated that more intelligent individuals with AS attribute their lack of social ability to internal and stable traits and are more cognitively aware of their inadequacies (Barnhill, 2001; Vickerstaff, 2006). This finding indicates that these children's perception of their social skills contributes to the development of depression. Children with higher cognitive abilities may be more aware of their difficulties and better appreciate the extreme complexities that are involved in social interactions. As these children and adolescents experience negative social interactions, they may develop feelings of hopelessness with the realization that their difficulties are embedded in their personality. So, the development of depression in Asperger's may, in part, result from a combination of cognitive factors and social impairments. Their social impairments may be perceived negatively by others, which results in little social reinforcement and unsuccessful interactions with peers, which contributes to children realizing their impairments. Their negative perceptions of themselves may cause them to withdraw further from others as they realize that their impairments are part of the nature of their disorder.

Similar to neurotypical children, family relationships may contribute to depression in children with Autism Spectrum Disorders. There is evidence that family conflict predicts anxiety and depression in children with Autism (Gadow, DeVincent,

Schneider, 2008; Kelly, Carnett, Attwood, & Peterson, 2008). There is also evidence that families with children with Autism report high levels of stress (Rodrigue, Morgan, & Geftken, 1990). Having a stressful home environment may create a cycle of depression and stress for both the parent and child. The parent may become stressed or frustrated with the difficulty of interacting with a child who is hard to connect with socially and emotionally. This stress may come through in unsuccessful interactions between the parent and child. These ineffective interactions may contribute to depressive symptoms in the child, which may add to further stress on the parent and continuation of unhappiness for the child.

An increase in the severity of the level of ASD symptomotology is associated with higher levels of anxiety and depression (Kelly, Garnett, Attwood, Peterson, 2008; Shtayermman, 2007). This finding may imply that more severe symptoms of Autism, including communication and social impairments, can result in further exclusion from peers and family members caused by a greater difficulty in relating to and understanding social actions of others, subsequently affecting their emotional health.

Social Competence

There are abundant definitions and conceptualizations of social competence. Many of the definitions incorporate possessing the necessary skills and strategies for successful social interactions and the maintenance of social relationships (Vickerstaff et al., 2006). Although it seems that "social skills" is a term that can be interchangeable with "social competence", these can also be referred to as distinct concepts. Social skills can be defined as behaviors used to interact effectively with others, whereas social

competence can be defined as the quality of a person's social ability as perceived by the self and others (Gresham, 1986; Warnes, Sheridan, Geske, & Warnes, 2005). Therefore, social competence may be thought of as a person possessing social skills that are used appropriately to have successful interactions as *perceived* by all parties involved in the interaction. In other words, social competence has an element of judgment involved, and the judgment can come from one's self, or others, such as teachers, peers, and parents. Behavior can be considered socially competent if it predicts important social outcomes for individuals, such as peer acceptance, acceptance by adults, school functioning, and mental health functioning (Gresham, 1986). Social competence has been shown to affect various areas of functioning, including educational attainment, ego development, self-esteem, psychological symptoms, and criminal behaviors (Hendricsson & Rydell, 2006; Larson, Whitton, Hauser & Allen, 2007; Libet & Lewinsohn, 1973; Rockhill, Vander Stoep, McCauley, & Katon, 2009). This review will focus on prevailing theories of social competence, skills that have been shown to be important for social competence, the difficulties of social competence that children with Asperger's may face, and issues regarding self perceptions of social competence.

Theories of Social Competence

Gresham (1986) proposed that social competence requires both adaptive behavior and social skills. Adaptive behavior includes independent functioning, skills, physical development, language development, and academic competencies, while social skills includes interpersonal behaviors (conversation skills, cooperative behaviors, etc.), self-

related behaviors (expressing feelings, attitude towards self), and task related behaviors (following directions, competing tasks) (Gresham, 1986).

According to Gutstein & Whitney (2002), there are three separate elements of social competence that are essential to develop in order to experience social success: a) secure attachment (the bond between an infant and his or her caregiver that generally begins after 6 months of age; secure attachments allow the child to use the caregiver as a source of support while experiencing distressing situations), b) instrumental social learning (interactions that have a specific goal, such as acquiring new information, help, obtaining specific objects, or meeting specific needs, and c) experience sharing relationships (the desire and skills necessary to understand others' emotions and be able to contribute to the social partnership in a give and take manner in a reciprocal nature of enjoyment and support). A secure attachment may be hard to measure in children with AS because of their difficulties in social interaction and communication. Research has found that children with autism are capable of forming attachment relationships with their caregivers. However, secure attachments are underrepresented in this population, while disorganized attachment is higher compared to the normal population (Naber et al, 2006).

Social Skills Necessary for Social Competence

Social competence includes a range of skills, including self-regulation, interpersonal knowledge and skills, self-identity, and social values and conventions (Talwar & Renaud, 2008). Other behaviors include social initiative and prosocial behaviors, such as willingness to help, share, and cooperate (Rydell, Hagekull, & Bohlin, 1997). Another vital skill in developing social competence is the ability to take the

perspectives of others and react properly (Warnes & Sheridian, 2005). Since perspective taking has been shown to be a major difficulty in children with AS, (Peterson, Slaughter, & Paynter, 2007), one can imagine the frustration that results from not being able to infer the driving forces behind the display of emotions and behaviors from others. Warnes and Sheridian (2005) surveyed second and fifth grade children, their parents, and teachers about the skills needed to make a good friend. All respondents, including second graders, included the following social behaviors: compromises, empathic, helpful, loyal, a happy disposition, and spends time together. It is important to note that empathy was expressed as an important social behavior, because empathy has been researched in the Asperger population due to their apparent difficulties in this area (Baron-Cohen & Wheelwright, 2004).

Social Competence Difficulties in Children with AS

Some of the social skill impairments of children with Asperger's include difficulties in nonverbal behaviors such as eye contact, reading and expressing facial expressions, and body language (Katsyri, Saalasti, Tiippana, von Wendt, Sams; 2008). Other difficulties are apparent in conversational skills, which include initiating and sustaining a conversation, using appropriate turn-taking, changing topics appropriately, having trouble understanding or using non-verbal social cues (Myles, et al., 2007). Because those with AS generally interpret language literally, they consequently have difficulty understanding non-literal language such as sarcasm, metaphors, figures of speech, and irony (Buettel, 2003). Associations have been found between false-belief tasks (tasks that measure theory of mind, which is the ability to infer other's mental

states), executive function, and social competence in neurotypical children (Razza & Blair, 2009). This finding speaks to the vulnerability to which children with Asperger's are predisposed because of their difficulties with theory of mind (Peterson, Slaughter, & Paynter, 2007) and executive functioning (Verte, Geurts, Roeyers, Oosterlaan, & Sergeant, 2006).

Not only do children with AS lack the skills necessary for developing and maintaining relationships, they also may lack schemas for what it means to be a friend or have friends. In a study that interviewed adolescents with AS in regard to their perception of friendships, findings indicated that the adolescents had inadequate insights into the components of friendship, such as what it means to be a friend and who would not be a friend, as well as little knowledge of the language to describe friendships (Carrington, Templeton, & Papinezak, 2003).

Since children with AS possess the desire to have relationships with others, but do not know how to initiate and sustain such relationships, frustration and hopelessness may result from a lack of positive interaction with others. Children with AS have average or above average cognitive abilities, so they are placed in regular education classrooms. Although one intent of this placement may be to enhance their academic and social development with their peers, research has shown that children with AS and High Functioning Autism experience low levels of involvement, acceptance, companionship, and reciprocity in the classroom (Chamberlain, Kasari & Rotheram-Fuller, 2007).

Children and adolescents with AS may experience severe social impairments-even more so than other disorders that involve poor social functioning. In a study of

adolescents with AS compared with peers with severe conduct disorders, those with AS were significantly more socially impaired than their peers with conduct disorders, had higher rates of unemployment, and had similarly high levels of depression and suicidal ideation (Green, Gilchrist, Burton, & Cox, 2000). Social competence is vital to quality of life, and the inability to develop it is likely a main factor contributing to the failure of most adults with autism to attain a good quality of life (Howlin and Goode, 2000).

Self-Perceived Social Competence

This study proposes to examine children's perceived level of social competence. According to Harter (1982), children older than age 8 are able to assess their self-competence in specific domains. To be able to assess one's personal abilities, one would assume that a degree of comparison of the self with others is necessary in order to develop a gauge of personal abilities. An awareness of being different from others may become increasingly apparent to children with AS, especially during adolescence as social demands, including autonomy and peer group identification become greater (Green el al., 2000; Klin, 2000; Wing, 1981). Research has shown that children and adolescents with Asperger's syndrome are able to compare themselves with others, and children who perceived themselves as more dissimilar to others reported higher levels of depressive symptoms (Hedley & Young, 2006).

Peer Victimization

Children and adolescents with AS do not develop perceptions of their social difficulties in isolation or by natural processes. They come to develop their awareness through observations and interactions with others. Their experiences might include

negative interactions with their peers or isolation and exclusion from their peers. There is insufficient research on the effects and prevalence of peer victimization or bullying in the Asperger population. Therefore, the few findings of peer victimization in the Asperger population will be described, while the majority of this review will come from research concerning peer victimization in children without AS.

Peer victimization is defined as physical, psychological, or verbal abuse by perpetrators who aim to cause their victims harm, and is often referred to as harassment, or bullying. Peer victimization is often categorized into physical aggression and relational aggression; physical aggression includes actions that mean to establish an imbalance of power between the perpetrator and victim, such as hitting and name calling, while relational aggression damages the adolescent's relational ties, such as spreading rumors and social exclusion (Crick & Grotpeter, 1996). Peer victimization has been found to change through developmental stages, as physical aggression becomes less acceptable in middle to high school, resulting in higher rates of verbal abuse and exclusion (Harris, 2004). A child who experiences victimization at one point is likely to be victimized in the future (Olweus, 1997), and those who are teased early on have been shown to be overly sensitive in their peer relationships and surroundings even into adulthood (Kumpulainen et al, 1999). An international study estimated the prevalence of children bullying or being bullied to be between 9% and 54% throughout the world (Nansel, Craig, Overpeck, Saluja, & Ruan, 2004).

Children with Asperger's may be more predisposed to experiencing peer victimization because of their social difficulties. In a study that surveyed a large sample

of middle-class mothers of children with AS and nonverbal learning disorders, the results showed staggering rates of peer victimization experiences of these children. The overall prevalence of victimization reported by mothers was an astounding 94%. The types of victimization were also described: 75% had been hit by peers or siblings in the past year, 75% were emotionally bullied, 10% of the children were attacked by a gang in the past year, and 15% were victims of nonsexual assault to the genitals (Little, 2002). Mothers also reported high rates of peer shunning, including not receiving invitations to birthday parties and eating lunch alone. The levels of peer shunning increased with age. Shtayermman (2007) also found high rates of victimization in adolescents and young adults with Asperger's syndrome, with additional high rates of clinically significant levels of suicidal ideation and depression. Social skills become increasingly important beginning in early adolescence as children develop more complex friendships and become more independent from their parents. The high levels of reported peer victimization in this age group may be related to the high demands on children to develop the necessary social skills that enable a child to belong to a social group and conform to social expectations.

The negative effects of peer victimization have been examined in children without disabilities. These negative effects may include depression (Hunter, Boyle, & Warden, 2007; Kumpulainen, Rasanen, Hentonnen, 1999; Roland, 2002; Sourander, Helstela, Helenius, & Piha 2000; Sweeting, Young, West, & Der, 2006), anxiety (Grills & Ollendick, 2002) loneliness, hopelessness, lower academic achievement (Flemming, L.C. & Jacobsen, K.H., 2009; Graham, & Bellmore,2007; Olweus, 1992) suicidal ideation

(Roland, 2002), and school-related anxiety or avoidance (Kumpulainen et al., 1998). These negative mental health outcomes may develop, in part, because the victims tend to blame themselves for their harassment because they think that there is something wrong with them that they cannot do anything to change their circumstances (Graham, & Bellmore, 2007). This finding parallels Abramson's theory in that making internal and stable attributions to negative events can result in depression. It is also important to note that victims may experience stable victimization, meaning that they are constant targets of peer victimization over time (Sweeting, Young, West, & Der, 2006). Repeated peer victimization may have even more profound effects on mental health than isolated victimization experiences, as research has found that the severity of the level of reported depression is positively correlated with a greater number of experiences of being bullied (Flemming & Jacobsen, 2009).

The relationship between peer victimization and depression may be reciprocal, especially when the child reaches early adolescence, as victimization can lead to depression, which can consequently be an added vulnerability to future victimization (Sweeting, et al., 2006). Another important consideration is that children who are bullied are not just unfortunate targets of bullies, but they often report having few friendships at all (Flemming & Jacobsen, 2009).

Conversely, positive effects of friendships provide additional evidence for the relationship between peer relationships and depression. The importance of having high quality relationships may have protective benefits, as research has shown that having

supportive and close peer relationships may serve as a safeguard from the development of depression and anxiety (Bukowski, Hoza, & Boivin, 1994; Rockhill, et al., 2009).

The many negative effects of peer victimization found in neurotypical children thus warrant additional research in the effects in children with Asperger's, especially because of the high prevalence rates of peer victimization in these children.

Summary

Asperger's syndrome is a relatively new diagnosis that is increasing in prevalence, perhaps because of increasing public awareness, changes in diagnostic criteria, better assessment tools, and methodological differences between studies of prevalence rates. Children with AS have impairments in social skills and show high rates of comorbid diagnoses of depression. Although there are many theories of depression that encompass cognitive, affective, environmental, and biological factors, a focus on cognitive vulnerability models will be used to provide the basis for the reasoning for the proposed model for this study. Cognitive vulnerability theories propose that when a person with negative thought processes encounters stress or negative events, depression may follow when the person attributes the negative event to internal and stable traits inherent to their personal weaknesses.

Both peer victimization and perceived social competence have been shown to affect depressive symptoms in children. Peer victimization contributes to depression in neurotypical children, but scarce research has been examined of the effects in children with AS, despite the high rates of prevalence of victimization in these children. Research has also shown that peer victimization contributes to children's overall perceived self-

worth, which provides the basis for hypothesizing that peer victimization affects children's perceived social competence. Furthermore, research has demonstrated that lower perceptions of social competence may affect depressive symptoms. This study proposes that children who experience high rates of peer victimization may attribute their experiences to their poor social abilities that are internal and stable, subsequently increasing their risk for the development of depression.

Proposed Research Study

Statement of Problem

Depression is one of the most prevalent co-morbid conditions found in Asperger's Syndrome (Ghaziuddin et al. 2002; Lainhart, 1999; Howlin, 2005). Depression has been shown to have many adverse effects on a person's quality of life and functioning (Hammen, 1991; Hirschfeld et al., 1997). Little research has examined the complexities of the influences of depression among children with Asperger's. One of the most significant impairments of these children is with social skills (Rogers, 2000; Wing, 1981) and research has examined that these children's perceptions of their social competence is negatively correlated with depression (Capps, Sigman, & Yirmiya, 1995; Vickerstaff, 2006; Williamson, Crig, & Slinger, 2008). An area of concern in this present study is the high rates of peer victimization that occur in children with Asperger's (Little, 2002). Although there is research that demonstrates that peer victimization predicts depression in neurotypical children (Flemming, L.C. & Jacobsen, K.H., 2009; Graham, & Bellmore, 2007; Roland, 2002; Ladd & Ladd, 1998; Olweus, 1992; Slee 1995), there is little, if any, research that examines how peer victimization may contribute to the development of depression in children with Asperger's. Furthermore, while there is research that demonstrates that peer victimization can contribute to the child's overall feelings of self-worth (Crick & Dodge, 1994), there is little research examining how peer victimization contributes specifically to children's self-perceived social competence. It is hoped that the findings from this proposed study will lead to an increased awareness of the emotional functioning, self-perceptions, and social relationships of children and

adolescents with AS, which may provide important information for treatment of depression in these children.

Statement of Purpose

The purpose of this study is to examine the possible effect of peer victimization and self-perceived social competence on symptoms of depression in children with AS. Specifically, this study will examine if self-perceived social competence mediates the presumed effect of peer victimization on depression. This study will also examine if peer victimization significantly predicts depression, if peer victimization significantly predicts self-perceived social competence, and if self-perceived social competence significantly predicts depression. It is expected that as peer victimization increases, self-perceived social competence will decrease, and depressive symptoms will increase. Variables will be measured with self-report questionnaires for depression, self-perceived social competence, and peer victimization.

An important consideration of this proposed study is that the data collected from this research will be non-experimental. Therefore, there is no experimental manipulation of any of the variables in order to determine their effect on depression. For that reason, the hypotheses and discussions of the effects of one variable on another are contingent on the validity of the models tested. If the models are not valid representations of relations among the variables and their effects, then the estimates of effects, and the conclusions drawn from the results, are not reasonable estimates of the effects of social competence and peer victimization on depression.

Research Questions and Hypotheses

Research Question 1

Do levels of Self-Perceived Social Competence in children and adolescents with AS help explain levels of depressive symptomotology?

Hypothesis

It is hypothesized that children's levels of self-perceived social competence will predict levels of depression, even after controlling for peer victimization age, and IQ. As self-perceived social competence decreases, it is expected that depressive symptoms will increase.

Rationale

One of the defining characteristics of AS is a deficit in social skills (Rogers, 2000; Wing, 1981; Asperger, 1944). Children with AS often have few or negative interactions with peers, which would contribute to their understanding of their social abilities. In addition, they may also gain perceptions of their abilities by comparing themselves to the abilities and successful interactions of their peers. By comparing themselves to peers and having poor interactions, these children are at risk of developing a negative perception of their abilities (Hedley & Young, 2006). Furthermore, having a low perception of their social skills may be associated with higher levels of depressive symptoms, as research in neurotypical children shows that lower scores in self-perceived social competence are associated with significantly higher depressive symptoms (Chan, 1997). This same finding has been shown in children with High Functioning Autism Spectrum Disorders (Vickerstaff et al., 2007).

Research Question 2

Do levels of Peer Victimization help explain levels of depressive symptomotology?

Hypothesis

It is hypothesized that levels of the child's experience with peer victimization will predict severity of depression, even while controlling for self-perceived social competence, age, and IQ. It is expected that as experiences with peer victimization increases, depressive symptoms will increase.

Rationale

Research has shown that peer victimization is associated with mental health difficulties, including depression (Graham, & Bellmore, 2007; Hunter, Boyle, & Warden, 2007; Hoglund & Leadbeater, 2007; Klomek, Marrocco, Kleinman, Schonfeld, Gould, 2008; Sweeting et al., 2006). Research has found that the level of reported depression is positively correlated with a greater number of experiences of being bullied (Flemming & Jacobsen, 2009).

Research Question 3

Do levels of peer victimization explain levels of self-perceived social competence in children and adolescents with AS?

Hypothesis

It is hypothesized that levels of peer victimization will explain levels of self-perceived social competence in children and adolescents with AS. It is expected that an increase in experienced peer victimization will show decreases in self-perceived social competence.

Rationale

Beck (1982) stated that depressive emotional, cognitive, and behavioral reactions are a result of the person relating an event to the self, as signified by the relevance of the event content to their personal area of vulnerability. This theory applied to the proposed study would suggest that children with Asperger's who attribute peer rejection and harassment to their own inadequate social skills would be likely to develop depressive reactions. Research has found that negative interpretations of ambiguous interactions, along with self blame, predict depressive symptomotology (Prinstein, Cheah, & Guyer, 2005). Furthermore, researchers have hypothesized that children's tendency to develop negative self-evaluations from social experiences my influence children's overall self-schemas and self-worth (Crick & Dodge, 1994). Victims tend to blame themselves for their harassment, think that it is because of internal characteristics that are unchangeable, and therefore feel hopeless and at fault (Graham, & Bellmore, 2007). This self blame and hopelessness fits into Abramson's (1989) Hopelessness theory of making internal and stable attributions for negative events. Children who reported higher levels of victimization reported lower levels of global self-worth (Andreou, 2000; Austin & Joseph, 1996; Grills & Ollendick, 2002). While global self-worth is not synonymous with perceived social competence, social competence is a particular domain within global self-worth that is expected to be affected by victimization, particularly in children with Asperger's because of their impairments in social abilities.

Research Question 4

Do levels of self-perceived social competence mediate the effect of peer victimization on depression?

Hypothesis

It is hypothesized that self-perceived social competence will partially mediate the effect of peer victimization on depression.

Rationale

Many theories of depression reason that cognitive processes contribute to negative thoughts about the self, especially when the person encounters negative events (Abramson, Metalsky, & Alloy, 1989; Beck, 1964; Nolen-Hoeksema's 1991) Logically, it seems that experiencing peer victimization itself isn't a direct influence on depression, but there is an additional variable in the equation of how peer victimization (the negative event) makes the person feel about themselves, which subsequently contributes to symptoms of depression. Since social skills are a defining impairment in children with Asperger's, and since peer victimization often focuses on a weakness of the victim, it is hypothesized that children with Asperger's will realize their inadequacies with social interaction, therefore contributing to their self-perceived social competence. Research has shown that global self-worth mediates the effect between peer victimization and anxiety in girls (Grills & Ollendick, 2002). This study will measure self-perceived social competence as opposed to overall self worth because it is hypothesized that peer victimization will not affect other domains as severely, such as academic abilities or other talents, since children with Asperger's distinguishing impairment is with social abilities.

Method

Participants

Participants will include 80 male students, ages 9 to 17, who have previously received a diagnosis of Asperger Syndrome by a licensed psychologist.

Exclusionary Criteria

Any participant who is found to have significantly below average intelligence, which will be defined by a Full Scale IQ < 85 (one standard deviation below the mean), will be excluded from the study. Participants who do not meet DSM-IV criteria for Asperger's Syndrome or who have not received a previous diagnosis of Asperger's Syndrome will be excluded.

Instruments

Cognitive Ability

Participants will be administered the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999), which is the brief version of the Wechsler Intelligence Scale for Children, Third Edition (WISC-III; Wechsler, 1992) in order to confirm an IQ of 85 or higher. The WASI is intended to provide a brief measure of intelligence. There are four subtests that produce a Full Scale IQ, Verbal IQ, and Performance IQ. The Verbal IQ score is derived from the Vocabulary and Similarities subtests, and the Performance IQ is derived from the Matrix Reasoning and Block Design subtests. The Full Scale IQ includes all four subtests. The WASI was nationally standardized on 2, 245 males and females, ages 6 to 89. The psychometric properties of the WASI are adequate. In the standardization sample, split-half reliabilities ranged from .81 to .98 for subtests and .92-

.98 for IQs. Test-retest reliability estimates ranged from .83 to .95 for subtests. Correlations between same-named subtests and scales on the WISC-III were moderate to high: *r* =.66-.88 for subtests and .76-.92 for IQs (Wechsler, 1999).

Peer Victimization

Participants will complete the Social Experience Questionnaire (Crick & Grotpeter, 1996). The SEQ was initially developed to measure overt, relational, and prosocial behaviors from peers. It is a 15 item self report questionnaire that measures three subscales of Overt Victimization, Relational Victimization, and Recipient of Prosocial Behaviors. Overt Victimization represents physical or verbal abuse, whereas Relational Victimization represents the hindrance of social inclusion or intentional manipulation of social relationships, such as spreading rumors or excluding the person from an activity. Recipient of Prosocial Behaviors involves experiencing positive relational behaviors such as receiving help or being cheered up by a peer. The original psychometric data were for a sample of 474 third through sixth graders (215 female, 259 male) in a moderately sized midwestern town. The children consisted of Caucasian and African-American students from low to low middle SES backgrounds. There were adequate internal consistency across the factors (*a* =0.77-.80) (Crick, N.R., Grotpeter, J.K., 1996). Storch, Crisp, Roberti, Bagner, & Masia-Warner (2005) established norms for the adolescence range to confirm the three-factor model of overt, and relational victimization, and prosocial behaviors from peers. They also established reliability and validity for the adolescence range. The sample included 1178 adolescence ages 13-17(79% female, 21%male) in New York City. Their results support the three-factor

model and support the use of the SEQ with adolescents. Cronbach's alpha for the subscales was α =.76 for the Overt Victimization subscale, a =.86 for the Relational Victimization subscale, and α =.76 for the Recipient of Prosocial Behaviors subscale (Crick & Grotpeter, 1996). There are 5 items for each subscale, each composed of Likert options ranging from 1=never to 5=all of the time. Higher scores indicate higher levels of victimization. Test-retest reliability over a 12 month interval had values of .57 for Overt Victimization, .53 for Relational Victimization, and .73 for Prosocial Behavior (Storch et al.).

Self Perceived Social Competence

The Social Skills Rating System (SSRS; Gresham & Elliot, 1990) is a multi-rater assessment. The child version of the self-report (SSRS-C) will be administered to participants. The SSRS is a standardized measure designed to provide a comprehensive view of students' social behaviors, including cooperation, assertiveness, responsibility, self-control, problem behaviors, and academic competence. There is an elementary form designed for children in grades three through six and a secondary level form designed for children in grades seven to twelve that adds additional questions that pertain uniquely to adolescents, such as questions about dating. Normative data was standardized on a national sample of over 4,000. The SRSS has adequate psychometric properties, with the coefficient alpha ranging from .72-.95 across all forms, and test-retest reliability or r =.87 for parents, and .68 (Gresham & Elliot, 1990). The child answers the question as it pertains to them with a Likert response scale: 0= never, 1= sometimes, 2= very often. Higher scores indicate higher perceptions of social competence. In a comparative

evaluation of six published social skills rating scales, the SSRS was viewed as the most comprehensive instrument, and the evaluators commended its multi-rater approach, intervention linkage, and overall strong reliability and validity (Ruffalo, Carlson, Busse, 1995).

Depression

All participants will complete the Childhood Depression Inventory (CDI; Kovacs, 1992). The CDI is a 27-item self report measure of depressive symptomotology, including cognitive, affective, and behavioral signs in children and adolescents. The CDI provides an overall measure of depression in addition to subscales of disturbed mood and interpersonal behaviors. The maximum raw score is 54, with high scores indicating more reported depressive symptomotology. Kovacs (1992) used normative data to suggest a cut-off score of 12 or greater to represent mild depression and 19 to indicate depression of clinical significance. The normative sample consisted of 1,266 public school students in Florida. Test-retest reliability is adequate, and varied from .66 to .82, depending on the internal between administrations, in a sample of 108 7-12 year old children in Florida (Finch, Saylor, Edwards, & McIntosh, 1987).

Procedure

Approval by Human Subjects Committee

This study will be conducted in compliance with the ethical standards authorized by the American Psychological Association, in addition to the standards approved by the University of Texas at Austin. Approval will be attained by the Institutional Review

Board at the University of Texas at Austin, and by the Educational Psychology Departmental Review Committee.

Approval by School Districts

One method of recruiting participants will be through local school districts. The primary investigator will approach the principals and superintendents of Central Texas schools and school districts with the study, providing them with the purpose and written proposal of the study. Upon further interest of participating on the part of the school officials, the investigator will meet to answer questions and set forth the plan of action.

Recruitment of Participants

The primary method of recruitment of participants will be recruited from an existing study through the University of Texas at Austin, in addition to recruitment through central Texas school districts and Asperger groups, including the College Living Experience, Austin Asperger's Syndrome meetup group, University of Texas Autism Project, Autism Speaks, and the Central Texas Autism Center. Parents will receive a letter explaining the purpose and requirements of the study. Parents will also receive a consent form in the initial letter.

Interview/Screening Phrase

Upon receiving the signed consent for participation in the study, the primary investigator will interview the parents with DSM-IV criteria in order to confirm a diagnosis of Asperger Syndrome.

Data Collection Phase

Participants will come to the University of Texas at Austin, in the Educational Psychology Departments' TARA rooms, for one session of assessment. The initial step will be the administration of the Wechsler Abbreviated Scale of Intelligence by the primary investigator. Upon earning an IQ score > 85, the participants will continue with further assessment. The data will be collected at the same time in one appointment. The participants will be given the questionnaires in random order. Participants will be given an option of completing the questionnaires themselves or by having the primary investigator read the questions aloud. The investigator will read the questionnaires to children under the age of 12 to ensure understanding.

Data Analysis and Expected Results

The primary purposes of this study will be to examine the possible effects of peer victimization and self-perceived social competence on depression symptomology. Specifically, this research will examine if self-perceived social competence mediates the effect of peer victimization on depression. Data including scores from the Social Experience Questionnaire, Social Skills Rating System, and Children's Depression Inventory will be analyzed using multiple regression analyses.

Preliminary Analysis

A power analysis was conducted using GPOWER software, version 3.0.10 to determine an appropriate number of participants needed in this study that would obtain a significant finding. With 2 independent variables, it was determined that 68 subjects would be needed in order to obtain a moderate effect size of (f^2=.15) at the level of power of .80 and an alpha of .05.

Preliminary analyses will be conducted to examine descriptive statistics for each variable, including means, standard deviations, ranges, and minimum and maximum values. Data will be analyzed to determine if there are any outliers. Linearity will be checked by inspecting scatterplots of the data, and a plot of the residuals against the predicted values will be examined to confirm the presence of normally distributed residuals.

Tests of Research Questions

The data will be analyzed using a series of simultaneous multiple regressions, while controlling for age and IQ.

Correlations will be observed for the independent variables' relationship with the dependent variable. An alpha of .05 will be used to determine statistical significance. The statistical significance of the unstandardized and standardized regression coefficients will be examined.

Hypotheses 1 & 2 will be tested with a single multiple regression to examine the effects of social competence and peer victimization on depression. Hypothesis three and four will be each tested with separate regressions.

Hypothesis 1

It is hypothesized that self-perceived social competence will explain a significant amount of the variability in depressive symptoms, after controlling for IQ, age, and peer victimization. Using simultaneous regression, the participant's scores on depressive symptoms, as measured by the CDI, will be regressed on the participant's scores on self-perceived social competence, as measured by the SSRS. It is hypothesized that self-

perceived social competence will explain a significant amount of variance in depression scores

Hypothesis 2

It is hypothesized that peer victimization will explain a significant amount of the variability in depressive symptoms, after controlling for IQ, age, and self-perceived social competence. Using simultaneous regression, the participant's scores on depressive symptoms, as measured by the CDI, will be regressed on the participant's scores on peer victimization, as measured by the SEQ. It is hypothesized that peer victimization will explain a significant amount of variance in depression scores.

Hypothesis 3

It is hypothesized that peer victimization will explain a significant amount of the variability in self-perceived social competence, after controlling for IQ and age. In a separate regression, the participant's scores on self-perceived social competence, as measured by the SSRS, will be regressed on the participant's scores on peer victimization, as measured by the SEQ. It is hypothesized that peer victimization will explain a significant amount of variance in self-perceived social competence.

Hypothesis 4

The following conditions must be met to consider mediation: (1) the regression of depression on peer victimization should be statistically significant, (2) the regression of depression on self-perceived social competence should be statistically significant, and (3) the regression of depression on both peer victimization and self-perceived social competence results in a reduction in the effect of peer victimization on depression (Baron

& Kenny, 1986). Once these criteria have been established, Sobel's (1988) test will be used to determine the statistical significance of the mediation.

It is expected that the association between peer victimization and depressive symptoms will decrease with the addition of self-perceived social competence into the model.

It is expected that self-perceived social competence will partially mediate the effect of peer victimization on depression. Partial mediation occurs when the effect of the independent variable on the dependent variable, (in this case, peer victimization on depression), remains significant with the addition of the mediating variable (self-perceived social competence) (Baron & Kenny, 1986).

Discussion

Summary

The aim of this study is to examine the contributing factors of depression: specifically peer victimization and self-perceived social competence. It is expected that peer victimization and self-perceived social competence will both predict depression, and that peer victimization will predict self-perceived social competence. It is also expected that self-perceived social competence will mediate the relationship between peer victimization and depression.

Asperger's syndrome is a disorder characterized by a significant impairment in social interaction and communication (Asperger, 1944; DSM-IV, 2000; Rogers, 2000; Wing, 1981). These children have been shown to have high rates of experience with bullying and teasing (Little, 2002). While depression is not included in the diagnostic criteria, it has been found to be one of the most prevalent comorbid conditions in children with AS (Ghaziuddin et al. 2002; Howlin, 2005; Lainhart, 1999). Research has shown that these children's perceptions of their social abilities can impact their emotional functioning, specifically in the development of depression (Capps, Sigman, & Yirmiya, 1995; Vickerstaff, 2006; Williamson, Crig, & Slinger, 2008). Research has also revealed that peer victimization can influence children's self-worth and depression in neurotypical children (Flemming, & Jacobsen, 2009; Graham, & Bellmore, 2007; Roland, 2002; Ladd & Ladd, 1998; Olweus, 1992; Slee 1995). These findings provide a basis to hypothesize that peer victimization may contribute to children with AS's perceptions of their social abilities and depression. Cognitive vulnerability models suggest that negative thought

patterns that generate from encountering negative events will predispose a person to developing depression (Abramson, Metalsky, & Alloy, 1989; Beck, 1964; Nolen-Hoeksema's 1991). In applying the cognitive vulnerability models to this study, when a child with AS encounters peer victimization, a negative thought pattern that leads the child to blame themselves and develop negative perceptions of their social competence is hypothesized to lead to higher depressive symptoms.

Implications

If students with AS have low perceptions of their social abilities, and if these perceptions are associated with depressive symptoms, treatment could include a focus on improving the child's perception of their social abilities. Early screenings could help to detect children who are in danger for developing depression based on low scores of self-perceived social competence. Treatments that focus on changing the child's cognitions, perhaps through Cognitive Behavioral Therapy, might help to boost the child's confidence in their social abilities and subsequently reduce depressive symptoms, especially if their perceptions are distorted from reality. An improvement in their self-concept might reduce depressive symptoms, as it has been shown that higher depressive symptoms are associated with a greater negative discrepancy between children's actual and perceived social competence (Whitton et al., 2008). Their improved self-concept might also encourage the student to engage in more social activities, as well as to make them more socially desirable with an improved mood, as it has been shown that children rate those who are depressed as less socially competent (Whitton et al., 2008).

It is important to note, however, that their perceptions of their social competence might unfortunately be close to accuracy because of their impairments in social functioning. Therefore, increasing their self-perception of their social competence should go hand in hand with actually increasing their social competence, because increasing their perceptions might set them up for failure if their social skills are not appropriately addressed. Schools or communities should have opportunities for these children to learn, practice, and develop age appropriate and enduring social skills throughout their school experiences. When these children near the end of their school career, professionals should gear the focus of social skill instruction towards transitioning into the world, such as through teaching social skills that will help them acquire and maintain jobs, prepare them for college experiences, or even for dating.

In the AS population, an association between peer victimization and depression may have implications for promoting emotional well-being. Adults in the child's life, such as teachers, parents, or extracurricular activity leaders need to be aware of the high rates of peer victimization that these children may be subjected to and subsequently be on guard for watching and appropriately deflecting or punishing perpetrators. Since exclusion and ostracism isn't as obvious as physical or verbal aggression, a possible option might be to inform the student's peers about the nature of AS and the social difficulties that they may experience in order to promote understanding and inclusion of the child.

Interventions with the child or adolescent with AS might include talking with them about their feelings of being teased, bullied, or excluded. It might help to teach the

child to develop attributions that are associated with more external and ephemeral attributions like “the child that is bullying me is not nice”, “I had bad luck with my peers today”, or “I may need to work on this aspect of social interaction more intensely” rather than internal and permanent attributions like “I am a horrible person”, “everyone picks on me/excludes me because I am different”, or “I will always be bad at social interactions”. It might also be important to teach the child self-help skills for what to do in the future when they are victimized, such as how to be assertive and stand up for oneself by using appropriate verbal phrases or scripts, knowing who to talk to in order to report a problem, or how to avoid certain situations that may result in an incident of being bullied or teased.

Limitations and Directions for Future Research

The nature of the deficits in AS may limit the accuracy of assessment for both depression and perceptions of social competence. Self-report measures require a degree of self-understanding, lexical knowledge and accurate distinctions between terms used to describe different emotions and social experiences. It is possible that deficits in emotional recognition and social understanding may limit accuracy of self-reports for children with AS. Future research that examines child’s self rating of social competence compared with parent, teacher, and peer ratings could help to determine the accuracy of the children with ASs’ reports of their social competence. In addition, discrepancies between the child’s perceived social competence compared with others may provide information for predicting levels of depression from not only how low the child perceives their social competence to be, but how distorted their perception is from reality. Another limitation from just using self reports in this study is that reporting events regarding peer

victimization may be embarrassing for some students, therefore possibly limiting truthful responses. Even though victimization can occur in a variety of contexts that parent and teachers may not always be present for (Ladd & Kochenderfer-Ladd, 2002), future research could examine teacher and parent reports of observed victimization in order to determine discrepancies in reports.

Another limitation of this study is that the sample only includes male subjects. Since females are known to have higher prevalence rates of depression, (Nolen-Hoeksema et al., 1994; Hankin et al., 1998), and there is a high ratio of males to females with AS (Gillberg, 1989), this study only included males in order to examine the effects of peer victimization and self-perceived social competence without confounding effects of gender. Therefore, the findings will not be completely generalizeable to females with AS. Future research into the effects of gender would not only provide findings that are generalizeable to both males and females with AS, but may help to provide insight into possible differences between gender in the development of depression.

An additional limitation of this study is that it does not account for other possible contributing or protective factors in the development of depression, such as family relationships, genetic predispositions, a negative cognitive thought pattern in other domains besides social competence, effects of other impairments displayed by children with AS, value of peer acceptance, negative life events, comorbid conditions that may influence depression, or experience with medication, intervention or therapy.

Lastly, another area for future research would be to examine a larger age range, perhaps in a longitudinal study, in order to determine if the trajectory of severity or

changes of depression symptoms, peer victimization, and self-perceived social competence, throughout the lifespan.

References

Abramson, L.Y., Metalsky, G.& Alloy, L. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review, 96*, 358-372.

Acosta, M.T. & Pearl, P.L. (2004). Imaging Data in Autism: From Structure to Malfunction. *Seminars in Pediatric Neurology, 11*, 205-213.

Allen, G. (2005). The cerebellum in Autism. *Clinical Neuropsychiatry: Journal of Treatment Evaluation, 2*(6), 321-337.

American Psychiatric Association. (2000). Diagnostic and statistical manual of mental disorders: DSM-IV-TR (4th ed., text revision). Washington, DC: Author.

Andreou, E. (2000). Bully/victim problems and their association with psychological constructs in 8-12 –year-old Greek school children. *Aggressive Behavior, 26*, 49-56.

Austin, S., & Joseph, S. (1996). Assessment of bully/victim problems in 8 to 11 year olds. *British journal of Educational Psychology, 66*, 447-456.

Bailey, A., Le Couteur, A., Gottesman, I., Bolton, P., Siminoff, E., et al.(1995) Autism as a strongly genetic disorder: evidence from a British twin study, *British Journal of Medical Psychology, 25*, 63-77

Bauminger, N. & Kasari, C. (2000). Loneliness and friendship in high-functioning children with Autism. *Child Development, 71(2)*, 447-456.

Bauminger, N., Shulman, C. & Agam, G. (2003) Peer interaction and loneliness in high functioning children with Autism. *Journal of Autism and Developmental Disorders. 33*(5), 489-507.

Barnhill, G.P. (2001). Social attributions and depression in adolescents with Asperger syndrome. *Focus on Autism and Other Developmental Disabilities*, *16*(1), 46-53.

Barnnill, G.P., Myles, B.S. (2001). Attributional style and depression in adolescents with Asperger syndrome. *Journal of Positive Behavior Interventions*, *3*(3), 175-182.

Baron-Cohen, S. & Wheelwright, S. (2004). The Empathy Quotient: An investigation of adults with Asperger syndrome or High Functioning Autism, and normal sex differences. *Journal of Autism and Developmental Disorders, 34*(2), 163-175.

Baron, R.M. & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Beck, A.T. (1964). Thinking and depression: II. Theory and therapy. *Archives of General Psychiatry*, *10*, 561-571

Bertrand, J., Boyle, C., Yeargin-Allsopp, M., Decoufle, P., Mars, A., & Bove, F., (2001). Prevalence of autism in a United States population. *Pediatrics*, *108*, 1155-1162.

Bernard, J., Harvey, V., Potter, D., & Prior, A. (2001). *Ignored or ineligible? The reality for adults with autism spectrum disorders.* London: The National Autistic Society.

Berntson, G.G. & Schumacher, K.M. (1980). Effects of Cerebellar Lesions on Activity, Social Interactions, and Other Motivated Behaviors in the Rat. *Journal of Comparative and Physiological Psychology, 94,* 706-717.

Bobee, S., Mariette, E., Tremblay-Leveau, H., Caston, J. (2000). Effects of early midline cerebellar lesion on cognitive and emotional functions in the rat. *Behavioral Brain Research, 112,* 107-117.

Buettel, M. (2006). Exploring current knowledge on asperger syndrome and best practices for school-based intervention. *School Psychology Quarterly, 21,* 349-357.

Bukowski, W.M., Joza, B., & Bovin, M. (1994). Measuring friendship quality during pre-adolescence: The development and psychometric properties of the friendship qualities scale. *Journal of Social and Personal Relationships, 11,* 471-484.

Capps, L., Sigman, M., & Yirmiya, N. (1995). Self-competence and emotional understanding in high-functioning children with autism. *Developmental and Psychopathology, 7,* 137-149

Carrington, S., Templeton, E., & Papinezak, T. (2003). Adolescents with Asperger syndrome and perception of friendship. *Focus on Autism and Other Developmental Disabilities, 18 (4),* 211-218

Chamberlain, B., Kasari, C., Rotheram-Fuller, E. (2007). Involvement or isolation? The social networks of children with Autism in regular classrooms. *Journal of Autism Developmental Disorders, 37,* 230-242.

Chan, D.W. (1997). Depressive symptoms and perceived social competence among Chinese secondary school students in Hong Kong. *Journal of Youth and Adolescence, 26*(3), 303-319.

Cicchetti, D. & Toth, S.L. (1998). The development of depression in children and adolescents. *American Psychologist, 33*(2), 221-241.

Crick, N.R., Grotpeter, J.K. (1996). Children's treatment by peers: victims of relational and overt aggression. *Develop Psychopath, 8*, 367-380.

Crick, N.R., & Dodge, K.A. (1994). A review of reformulation of social information processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*, 74-101.

Coyne, J. C. (1976). Toward an interactional description of depression. *Psychiatry, 39*, 28-40.

Davies, P.T., & Windle, M. (1997). Gender-specific pathways between maternal depressive symptoms, family discord, and adolescent adjustment. *Developmental Psychology, 33*, 657-668.

Eluvathingal, T.J., Behen, M.E., Chugani, H.T., Janisse, J., Bernardi, B., Chakraborty, P., Juhasz, C., Muzik, O., Chugani, D.C. (2006). Cerebellar lesions in tuberous sclerosis complex:Neurobehavioral and neuroimaging correlates. *Journal of Child Neurology, 21*, 846-851.

Fallon, J. (2005). Could one of the most widely prescribed antibiotics amoxicillin/clavulanate "augmentin" be a risk factor for autism? *Medical Hypothesies, 64*(3), 12-15.

Finch, A.J., Saylor, C.F., Edwards, G.L., McIntosh, J.A. (1987). Children's Depression Inventory: Reliability over repeated administrations. Journal of Clinical Child Psychology, 16(4), 339-341.

Flemming, L.C. & Jacobsen, K.H. (2009). Bullying and symptoms of depression in Chilean middle school students. *Journal of School Health, 79*(3), 130-137.

Fombonne, E. (2003). Epidemiological studies of pervasive developmental disorders. An update. *Journal of Autism and Developmental Disorders*. 33(4), 365-382.

Folstein, S.E., Rosen-Sheidley, B. (2001). Genetics of autism: complex etiology for a heterogeneous disorder. *Nature Review Genetics, 2*, 943-955.

Freeman, B. J., Cronin, P., Candela, P. (2002). Asperger syndrome or autistic disorder? The diagnostic dilemma. *Focus on Autism and Other Developmental Disabilities*, *17*(3) Special issue: Asperger syndrome. 145-151.

Frith, U. (Eds.) (1991). Autism and Asperger syndrome. Cambridge, UK: Cambridge University Press.

Gadow, K.D., DeVincent, C., Schneider, J. (2008). Predictors of Psychiatric Symptoms in Children with an Autism Spectrum Disorder, *Journal of Autism and Developmental Disorders, 38,* 1710-1720.

Ghaziuddin, M., Weidmer-Mikhail, E., Ghaziuddin, N. (1998). Comorbidity of Asperger syndrome: a preliminary report. *Journal of Intellectual Disability Research, 4,* 279-283

Gillberg, C. (1989). Asperger syndrome in 23 Swedish children. *Developmental Medicine and Child Neurology, 31(4),* 520-531.

Grills, A.E., & Ollendick, T.H. (2002). Peer Victimization, Global Self-Worth, and Anxiety in Middle School Children. *Journal of Clinical Child and Adolescent Psychology, 31*(1), 59-68.

Gutstein, S.E., Whitney, T. (2002). Asperger syndrome and the development of social competence. *Focus on Autism and Other Developmental Disabilities, 17(3)*, 161-171.

Graham,S., & Bellmore, A.D., 2007. Peer Victimization and Mental Health During Early Adolescence. *Adolescent Mental Health. Theory into Practice, 46*(2), 138-146.

Grant, K., Compas, B.E., Thorn, A.E., McMahon, S.D., & Gipson, P.Y. (2004). Stressors and child and adolescent psychopathology: Moving from markers to mechanisms of risk. *Psychological Bulletin*, *129*, 447-466.

Green, J., Gilchrist, A., Burton,D., & Cox, A. (2000). Social and psychiatric functioning in adolescents with Asperger syndrome compared with conduct disorder. *Journal of Autism and Developmental Disorders*, *30*, 279-293.

Gresham, F.M. Conceptual and Definitional Issues in the Assessment of Children's Social Skills: Implications for Classification and Training. *Journal of Clinical Child Psychology, 15*(1), 3-15.

Gresham, F.M. & Elliot, S.N. (1990). *The social skills rating system*. Circle Pines, MN: American Guidance Service.

Hammen, C. (1991). *Depression runs in families: The social context of risk and resilience in children of depressed mothers.* New York: Springer-Verlag.

Hankin, B.L., Abramson, L., Moffitt, T., Silva, P., McGee, R., & Angell, K. (1998). Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology, 107,* 128-140.

Harrington, R., Fudge, h., Rutter, M., Pickeles, A., & Hills, J. (1990). Adult outcomes of childhood and adolescent depression: I. Psychiatric status. *Archives of General Psychiatry, 47,* 465-473.

Harris, S. (2004). Bullying at school among older adolescents. *Prevention Researcher, 11,* 12-14. Harter, S. (1982). The perceived competence scale for children. *Child Development, 53,* 87-98.

Hedley, D., & Young, R. (2006). Social comparison processes and depressive symptoms in children and adolescents with Asperger syndrome. *Autism, 10*(2), 139-153.

Hendricsson, L. & Rydell, A.-M. (2006). Children with behavior problems: The influence of social competence and social relations on problem stability, social achievement, and peer acceptance across the first six years of school. *Infant and Child Development, 15,* 347- 366.

Hinshaw, S.P. (2008). Developmental psychopathology as a scientific discipline: Relevance to behavioral and emotional disorders of childhood and adolescence. *Child and Adolescent Psycopathology* (pp 3-26). New Jersey: John Wiley & Sons, Inc.

Hirschfeld, R., Keller, M. Panico, S., Arons, B., Barlow, D., Davidoff, F., Endicott, J., Froom, J., Goldstein, M., Gorma, J. Guthrie, D., Marck, R., Mauren, T., Meyer,

R., Phillips, K., Ross, J., Schwenk, T., Sharfstein, S., Thase, M. & Wyatt, R. (1997). The national depressive and manic-depressive association consensus statement on the undertreatment of depression. *Journal of the American Medical Association, 277,* 333-340.

Hoglund, W.L. & Leadbeater, B.J. (2007). Managing threat: Do social-cognitive processes mediate the link between peer victimization and adjustment problems in early adolescence? *Journal of Research on Adolescence, 17*(3), 525-540.

Howlin, R., & Goode, S. (2000). Outcome in adult life for people with autism and Asperger's syndrome. *Autism, 4(1),* 63-83.

Hunter, S.C., Boyle, J.M.E., Warden, D. (2007). Perceptions and correlates of peer-victimization and bullying. *British Journal of Educational Psychology, 77*, 797-810.

Hyde, J.S., Mezulis, A.H., & Abramson, L.Y. (2008). The ABCs of depression: Integrating affective, biological, and cognitive models to explain the emergence of gender difference in depression. *Psychological Review, 115(2),* 291-313.

Joiner, T.E. (2000). Depression vicious scree: Self-propagating and erosive processes in depression chronicity. *Clinical Psychology: Science and Practice, 7,* 203-218.

Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child, 2*, 217-250

Katsyri, J., Sallasti, S., Tiippana, K., von Wendt, L., & Sams, M. (2008). Impaired recognition of facial emotions from low-spatial frequencies in Asperger syndrome. *Neuropsychologia*, *47*(7), 1888-1897.

Kawashima, H., Mori, T., Kashiwagi, Y., Takekuma, K., Hoshika, A., & Wakefield, A., (2000). Detection and sequencing of measles virus from peripheral mononuclear cells from patients with inflammatory bowel disease and autism. *Digestive Diseases and Science, 45,* 723-729.

Kelly, A.B., Garnett, M.S, Attwood, T., & Peterson, C. (2008). Autism spectrum symptomatology in children: The impact of family and peer relationships. *Journal of Abnormal Child Psychology, 36,* 1069-1081.

Klin, A., Volkmar, F., & Sparrow, S. (2000). *Asperger syndrome*. New York: The Guilford Press.

Klomek, A.B., Marrocco, F., Kleinman, M., Schonfeld, I.S., Gould, M.S. (2008). Peer victimization, depression, and suicidality in adolescents. *Suicide and Life-Threatening Behavior 38*(2), 166-180.

Kovacs, M. (1992). *Children's depression inventory*. New York: Multi-Health Systems.

Kumpulainen, K., Rasanen, E., Hentonnen, I. (1999). Children involved in bullying: Psychological disturbance and the persistence of the involvement. *Child Abuse and Neglect, 23,* 1253-1262.

Kumpulainen, K., Rasanen, E., Hentonnen, I., Almqvist, F., Kresanov, K., Linna, S., Moilanen, I., Piha, J., Puura, K., & Tamminen, T. (1998). Bullying and psychiatric symptoms among elementary school-age children. *Child Abuse and Neglect, 22,* 705-717.

Ladd, G. W., & Koechenderfer-Ladd, B. (2002). Identifying victims of peer aggression from early to middle childhood: Analysis of cross-informant data for

concordance, estimation of relational adjustment, prevalence of victimization, and characteristics of identified victims. *Psychological Assessment, 14*, 74-96.

Larson, J.L., Whitton, S.W., Hauser, S.T., Allen, J.P. (2007). Being Close and Being Social: Peer Ratings of Distinct Aspects of Young Adult Social Competence. *Journal of Personality Assessment, 89*(2), 136-148.

Lee, H.J. & Park, H.R. (2007). An integrated literature review on the adaptive behavior of individuals with Asperger syndrome. *Remedial and Special Education*, *28(3)*, 132-139.

Leyfer, O.T., Folstein, S.E., Bacalman, S., Davis, N.O., Dinh, E., Morgan, J., Tager-Flusberg, H., Lainhart, J.E. (2006). Comorbid psychiatric disorders in children with Autism: Interview development rates and disorders. *Journal of Autism and Developmental Disorders, 36*, 849-861.

Lewinsohn, P.M., Mischel, W., Chaplin, W., & Barton, R. (1980). Social Competence and Depression: The Role of Illusory Self-Perceptions. *Journal of Abnormal Psychology, 89*(2), 203-212.

Libbey, J.E., Sweeten, T.L., McMahon, W.M., Fujinami, R.S. (2005). Autistic disorder and viral infections. *Journal of Neurovirology. 1*(1), 1-10.

Libet, J.M. & Lewinsohn, P.M. (1973). Concept of social skill with special reference to the behavior of depressed persons. *Journal of Consulting and Clinical Psychology, 40*(2), 304-312.

Little, L. (2002). Middle-class mother's perceptions of peer and sibling victimization among children with Asperger's Syndrome and nonverbal learning disorders. *Issues in Comprehensive Pediatric Nursing, 25,* 43-57.

Lord, C., & Corsello, C. (2005). Diagnostic instrument in autistic spectrum disorders. In F. Volkmar, P. Klin & D Cohen (Eds.), *Handbook of autism and pervasive developmental disorders* (pp730-771). New York: Wiley and Sons.

Lyons, V., and Fitzgerald, M. (2007). Asperger (1906-1980) and Kanner (1894-1981), the two pioneers of autism. *Journal of Autism Developmental Disorders, 37,* 2022-2023.

McGuffin, P., Katz, R. (1989). The genetics of depression and manic depressive illness. *British Journal of Psychiatry, 155,* 249-304.

Miller, L., & Reynolds, J. (2009). Autism and vaccination-The current evidence. *Journal for Specialists in Pediatric Nursing, 14*(3), 166-172.

Monroe, S. M., & Harkness, K.L. (2005). Life stress, the "kindling" hypothesis, and the recurrence of depression: Considerations from a life stress perspective. *Psychological Review, 112,* 417-445.

Moy, S.S. & Nadler, J.J. (2008). Advances in behavioral genetics: Mouse models of autism. *Molecular Psychiatry, 13*(1), 4-26

MRC (2001). Review of autism research. Epidemiology and causes. Anonymous. Medical Research Council.

Myles, B.S., Lee, H.J., Smith, S.M., Tien,K-C., Chou,Y-C., Swanson, T.C., and Hudson, J. (2007). A large-scale study of characteristics of Asperger syndrome. *Education and Training in Developmental Disabilities*, *42(4)*, 448-459.

Naber, F.B., Swinkels, S.H., Buitelaar, J.K., Bakermans-Kraneburg, M.J., van IJzendoorn, M.H., Dietz, C., van Daalen, E., van Engeland, H. (2007). Attachment in toddlers with Autism and other developmental disorders. *Journal of Autism and Developmental Disorders*, *37*, 1123-1138.

Nansel, T.R., Craig, W., Overpeck, M.D., Saluja, G., Ruan, J. (2004). Health behavior in school-aged children bullying analyses working group. Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Archive of Pediatric and Adolescent Medicine, 158(8)*, 730-736.

Newschaffer, C.J., Croen, L.A., Daniels, J., Giarelli, E., Grether, J.K., Levy, S.E., Mandell, D.S., Miller, L.A., Pinto-Martin, J., Reaven, J., Reynolds, A.M., Rice, C.E., Schendel, D., & Windham, G.C., (2007). The epidemiology of Autism spectrum disorders. *The Annual Review of Public Health*, *28*, 235-258.

Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569-582.

Nolen-Hoeksema, S., & Girgus, J.S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin*, *115*, 424-443.

Olweus, D. (1993). *Bullying at school*. Madden, MA: Blackwell Publishers Inc.

Olweus, D. (1997). Bully/victim problems in school: Knowledge base and an effective intervention program. *The Irish Journal of Psychology,* 18, 170-190.

Peterson, C., Slaughter, V., & Paynter, J. (2007). Social maturity and theory of mind in typically developing children and those on the autism spectrum. *Journal of Child Psychology and Psychiatry*, *48(12),* 1243-1250.

Portway, S. M. & Johnson, B. (2005). Do you know I have Asperger's syndrome? Risks of a non-obvious disability. *Health, Risk & Society, 7(1),* 73-83.

Prinstein, M.J., Cheah, C.S.L., & Guyer, A.E. (2005). Peer victimization, cue interpretation, and internalizing symptoms: Prelilminary concurrent and longitudinal findings for children and adolescents. *Journal of Clinical Child and Adolescent Psychology*, *34*(1), 11-24.

Razza, R.A. & Blair, C. (2009). Associations among false-belief understanding, executive function, and social competence: A longitudinal analysis. *Journal of Applied Developmental Psychology, 30,* 332-343.

Reijntjes, A., Stegge, H., Terwogt, M.M. (2006). Children's coping with peer rejection: The role of depressive symptoms, social competence, and gender. *Infant and Child Development, 15*(1), 89-107.

Rinehart, N.J., Bellgrove, M.A., Tonge, B.J., Brereton, A.V., Howells-Ranklin, D., Bradshaw, J.L. (2006). An examination of movement kinematics in young people with High-functioning Autism and Asperger's disorder: Further evidence for a motor planning deficit. *Journal of Autism and Developmental Disorders, 36,* 757-767.

Ritvo, E.R., Freeman, B.J., Mason-Brothers, A., Mo, A., Ritvo, A.M. (1985). Concordance for the syndrome of autism in 40 pairs of afflicted twins. *American Journal of Psychiatry, 142*, 74-77.

Rockhill, C.M., Vander Stoep, A., McCauley, E., & Katon, W.J. (2009). Social competence and social support as mediators between comorbid depressive and conduct problems and functional outcomes in middle school children. *Journal of Adolescence, 32*, 535-553.

Rodrigue, J.R., Morgan, S.B., & Geftken, G.R. (1990). Families of autistic children: Psychological functioning of mothers. *Journal of Clinical Psychology, 19*, 371-379.

Rogers, S.J. (2000). Interventions that facilitate socialization in children with autism. *Journal of Autism and Developmental Disorders, 30*, 399-409.

Roland, E. (2002). Bullying, depressive symptoms and suicidal thoughts. *Educational Research, 44*, 55-67.

Ruffalo, S.L., Carlson, J., & Busse, R.T. (1995). Social skills assessment: A comparative evaluation of six published rating scales. *School Psychology Review, 24(4)*, 648-671.

Rydell, A-M, Hagekull, B., Bohlin, G., (1997). Measurements of two social competence aspects in middle childhood. *Developmental Psychology, 33*, 824-833.

Sciutto, Mark J.; Cantwell, Cassandra (2005). Factors Influencing the Differential Diagnosis of Asperger's Disorder and High-Functioning Autism. *Journal of Developmental and Physical Disabilities, 17*(4), 345-359.

Shtayermman, O. (2007). Peer victimization in adolescents and young adults diagnosed with Asperger's syndrome: A link to depressive symptomatology, anxiety symptomatology, and suicidal ideation. *Issues in Comprehensive Pediatric Nursing, 30*(3), 87-107.

Stark, K.D., Rouse, L., & Livingston, R. (1991). Treatment of depression during childhood and adolescents: Cognitive-behavioral procedures for the individual and family. In P.C. Kendall (Ed.), *Child and adolescent therapy: Cognitive-behavioral procedures* (pp.165-208). New York: Guilford Press.

Storch, E., Crisp, H., Roberti, J.W., Bagner, D.M., & Masia-Warner, C. (2005). Psychometric evaluation of the Social Experience Questionnaire in adolescents: Descriptive data, reliability, and factorial validity. *Child Psychiatry and Human Development, 36*(2).

Sobel, M. E. (1988). Direct and indirect effect in linear structural equation models. In J. S. Long (Ed.), *Common problems/proper solutions: Avoiding error in quantitative research*, 46-64. Beverly Hills, CA: Sage.

Sourander, A., Helstela, L., Helenius, H., & Piha, J. (2000). Persistence of bullying from childhood to adolescence-a longitudinal 8-year follow-up study. *Child Abuse and Neglect, 24(7).* 873-881.

Sullivan, P., Neale, M.C., & Kendler, K. (2000). Genetic epidemiology of major depression: Review and meta-analysis. *American Journal of Psychiatry, 157*, 1552-1562.

Sweeting, H., Young, R., West, P., & Der, G. (2006). Peer victimization and depression in early-mid adolescence: A longitudinal study. *British Journal of Educational Psychology, 76*, 577-594.

Talwar, V., Renaud, S.-J. (2008). The challenges of acquiring the complex and essential skills of social competence. *PsycCRITIQUES, 53*(21).

Tamminga, C.A., Nemeroff, C. B., Blakely, R.D., Brady, L., Carter, C.S., Davis, K.L. et al. (2002). Developing novel treatments for mood disorders: Accelerating Discovery. *Biological Psychiatry, 52*, 589-609.

Tantam**,** D. (1991). Autism and Asperger syndrome. Frith, Uta (Ed.), New York: Cambridge University Press, pp. 147-183.

Tryon, Patti Ann; Mayes, Susan D.; Rhodes, Robert L (2006). Can Asperger's disorder be differentiated from autism using DSM-IV criteria? *Focus on Autism and Other Developmental Disabilities*, *21*(1), 2-6.

Verte, S., Geurts, H.M., Roeyers, H., Oosterlaan, J., & Sergeant, J.A. (2006). Executive functioning in children with an Autism spectrum disorder: Can we differentiate within the spectrum? *Journal of Autism and Developmental Disorders, 36(*3), 351-372.

Vickerstaff, S., Heriot, S., Wong, M., Lopes, A., Dossetor, D. (2007). Intellectual ability, self-perceived social competence, and depressive symptomotology in children with high-functioning autistic spectrum disorders. *Journal of Autism and Developmental Disorders*. *37*, 1647-1664.

Warnes, E.D., Sheridan, S.M., Geske, J., Warnes, W.A. (2005). A contextual approach to the assessment of social skills: Identifying meaningful behaviors for social competence. *Psychology in the Schools, 42(*2), 173-187.

Weber, A.M., Egelhoff, J.C., McKellop, M., & Franz, D.N. (2000). Autism and the Cerebellum:Evidence from Tuberous Sclerosis. *Journal of Autism and Developmental Disorders, 30*,511-517.

Whitton, S.W., Larson, J.J., Hauser, S.T., (2008). Depressive symptoms and bias in perceived social competence among young adults. *Journal of Clinical Psychology, 64(7),* 791-805.

Williamson, S., Craig, J. Slinger, R. (2008). Exploring the relationship between measures of self-esteem and psychological adjustment among adolescents with Asperger syndrome. *Autism, 12(4),* 391-402.

Wing, L. (1981). Asperger's syndrome: A clinical account. *Psychological Medicine, 11*, 115-129.

Wechsler, D. (1999). *Wechsler abbreviated scale of intelligence*. San Antonio, TX: The Psychological Corporation.

World Health Organization, (1992). *Tenth revision of the international classification of disease.* Geneva: Author.